Utah State Implementation Plan

Section XX

Regional Haze

Addressing Regional Haze Visibility Protection for the Mandatory Federal Class I Areas Required Under 40 CFR 51.309

Complete Document Available On-line at
http://www.airquality.utah.gov/SIP/Regionalhazesip/regionalhaze.htm

Adopted by the Air Quality Board
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A. EXECUTIVE SUMMARY

This document comprises the State of Utah's State Implementation Plan (SIP) submittal to the U.S. Environmental Protection Agency (EPA) under the Regional Haze Rule in Section 309 of Title 40 of the Code of Federal Regulations, Part 51 (40 CFR 51.309). Part B includes introductory and background information. The remaining parts identify the SIP requirements under Section 309 and detail how Utah is addressing those requirements, and appendices include more detail about certain parts. Table 1 is a brief summary of each of the 309 SIP requirements along with Utah's approach in addressing those requirements.

Table 1. Executive Summary of Long-term Strategies

Clean Air Corridors *309(d)3)*	Part C documents that emission growth inside and outside of the Clean Air Corridor is not shown to be contributing currently to impairment within the Clean Air Corridor.
Stationary Sources *309(d)(4), (f)(4) and (h)*	Part D includes proof of a 13% reduction in sulfur dioxide emissions between 1990 and 2000, the report on NOx/PM strategies, geographic enhancement provisions, and other stationary source materials.
Sulfur Dioxide Milestones and Backstop Trading Program *309(d)(4) and (h)*	Part E includes milestones for sulfur dioxide emissions along with a backstop market cap and trade program for sulfur dioxide emissions from specific sources.
Mobile Sources *309(d)(5)*	Part F demonstrates that federal programs (such as low sulfur diesel, vehicle emission standards, etc.) lead to decreasing mobile source emissions throughout the planning period.
Programs Related to Fire *309(d)(6)*	Part G demonstrates that Utah has developed a smoke management regulation (R307-204) that implements the Western Regional Air Partnership (WRAP) *Enhanced Smoke Management Programs for Visibility Policy*.
Paved and Unpaved Road Dust *309(d)(7)*	Part H discusses the WRAP finding that dust emissions are not now a significant regional contributor to visibility impairment within the Colorado Plateau 16 Class I areas.
Pollution Prevention *309(d)(8)*	Part I describes programs and policies within Utah related to renewable energy and energy efficiency. Utah's anticipated contribution to the pollution prevention goals is outlined.
Additional Recommendations *309(d)(9)*	Part J summarizes that Utah has not identified any other recommendations in the Grand Canyon Visibility Transport Commission Report to implement in Utah at this time. A report on each recommendation is included in the Utah Technical Support Document Supplement.

Projection of Visibility Improvement *309(d)(2)*	Part K projects visibility improvement for the 20% best and worst days for each of the Class I areas on the Colorado Plateau (Arches, Bryce, Canyonlands, Capitol Reef, and Zion National Parks in Utah and the other 11 Class I areas in adjacent states that were addressed by the Grand Canyon Visibility Transport Commission)
Periodic Revisions *309(d)(10)*	Part L commits the State of Utah to submit periodic revisions to this SIP every five years.
State Planning and Interstate Coordination *309(d)(11)*	Part M describes Utah's participation in the Western Regional Air Partnership.
Reasonable Progress for Additional Class I Areas *309(g)*	Utah has no additional Class I areas.

Technical Support Documents

Accompanying this implementation plan and associated appendices are two other documents. The first is a Technical Support Document (TSD) developed by the Western Regional Air Partnership (WRAP) that contains the results of numerous collaborative studies by the WRAP members on which the State of Utah has relied. In the implementation plan, this is referred to as the "WRAP TSD." The WRAP TSD also includes appendices. In addition, there are other supplemental materials that are state-specific technical support information. In the implementation plan, these are referred to as the "Utah TSD Supplement."

B. BACKGROUND ON THE REGIONAL HAZE RULE

1. Introduction

Good visibility is important to fully enjoy the experience of visiting our national parks and wilderness areas. Visibility is impaired by light scattering and absorption caused by particulate matter and gases in the atmosphere that occur from both natural and human-caused activities. Visibility can be impaired by natural sources such as rain, wildland fires, volcanic activity, sea mists, and wind blown dust from undisturbed desert areas. Visibility also can be impaired by human-caused sources of air pollution such as industrial processes, (utilities, smelters, refineries, etc.), mobile sources (cars, trucks, trains, etc.) and area sources (residential wood burning, prescribed burning on wild and agricultural lands, wind blown dust from disturbed soils, etc.) These sources emit pollutants that, in higher concentrations, also can affect public health.

The State of Utah has implemented this section of the State Implementation Plan to address visibility protection in the mandatory Federal Class I areas (Class I areas) required under 40 CFR 51.309. It contains all measures necessary to address regional haze visibility impairment to ensure the State of Utah makes reasonable progress toward the national goal contained in 42 U.S.C. 7491.

2. Definitions

This Plan contains terms and phrases that have formal definitions under 40 CFR 51.301, 40 CFR 51.309(b), and other terms specific to the programs set forth in this Plan. These definitions are contained in Appendix A of this section and shall prevail over other interpretations as to the meaning and intent of this Plan.

3. 1977 Clean Air Act

In the 1977 Clean Air Act, Congress established requirements for the prevention of significant deterioration of air quality in areas within the United States and for the review of pollution controls on new sources.[1] Coupled with this, Congress established a visibility protection program for those larger national parks and wilderness areas designated as mandatory Federal Class I areas (Class I areas).[2] This program established a national goal of "...the prevention of any future, and remedying of any existing impairment of visibility in mandatory Federal class I areas, which impairment results from man-made air pollution" and requires states to develop long-term strategies to assure reasonable progress toward this national goal. The program also requires states to address any visibility impairment caused by emissions of air pollutants from certain large

[1] *Clean Air Act Amendments of 1977*, United States Congress. 42 U.S.C. 7470-7479. Government Printing Office: Washington, D.C. August 7, 1977.

[2] *Clean Air Act Amendments of 1977, Section 169A*, United States Congress. 42 U.S.C. 7491. Government Printing Office: Washington, D.C. August 7, 1977.

industrial sources if the source was less than 15 years old as of August 1977, through the establishment of emission limits based on best available retrofit technology (BART). Congress also established mandatory criteria for states to use when establishing BART emission limits and developing long-term strategies for reasonable progress toward meeting the national goal.

4. Reasonably Attributable Visibility Impairment SIP

In 1980, the United States Environmental Protection Agency (EPA) issued final regulations to address the requirements of the 1977 Clean Air Act, requiring states with Class I areas to submit State Implementation Plan (SIP) revisions with new source review plans, monitoring plans, BART implementation plans, and long-term strategies to address reasonable progress toward the national visibility goal.[3] Utah's SIP for visibility protection was submitted to EPA on April 26, 1985, and approved on May 30, 1986.

In the mid-1980s, Governor Bangerter appointed a Task Force on Visibility Protection to determine the appropriate level of protection for Utah's Class I areas, and to determine the sources of impairment of visibility in those areas. The Task Force included representatives of industry, environmental groups, local governments, and citizens at large. The Task Force visited many sites within Utah's five Class I areas and heard presentations from technical experts in the science of visibility. After more than a year of investigation, the Task Force recommended that all Utah Class I areas need protection, and that the biggest cause of visibility impairment is not individual industrial sources, but rather the regional haze from a multitude of sources that is transported over long distances.

In 1985, the Interagency Monitoring of Protected Visual Environments (IMPROVE) program was established to coordinate the monitoring air quality in national parks and wilderness areas and to ensure sound and consistent scientific methods were being used.[4] The IMPROVE Steering Committee established monitoring protocols for visibility measurement, particulate matter measurement, and scientific photography of the Class I areas. IMPROVE monitoring is designed to establish reference information on visibility conditions and trends to aid in the development of visibility protection programs. Monitoring from the IMPROVE network demonstrated that visibility in all the Class I areas is impaired to some degree by regional haze.

5. 1990 Clean Air Act

Although the 1980 regulations addressed reasonably attributable visibility impairment from specific sources, also known as plume blight, it did not adequately address visibility impairment from large collections of sources whose emissions are mixed and transported over long distances, creating a uniform haze (regional haze). In the 1990 amendments to the Clean Air Act, Congress established the requirements to

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[3] *40 CFR Part 51 - Protection of Visibility*, United States Environmental Protection Agency, 45 FR 80089. Government Printing Office: Washington, D.C. December 2, 1980.

[4] IMPROVE Home Page. http://vista.cira.colostate.edu/improve (accessed April 2003).

address regional haze visibility impairment, giving the EPA authority to establish visibility transport commissions and promulgate regulations to address regional haze, and requiring the establishment of a visibility transport commission to investigate and report on regional haze visibility impairment in the Grand Canyon National Park located in northern Arizona.[5]

6. Grand Canyon Visibility Transport Commission

The Grand Canyon Visibility Transport Commission (GCVTC) was established by EPA in November of 1991, consisting of seven western governors (or their designees), and five ex-officio members representing federal land management agencies and EPA. When establishing the GCVTC, EPA designated a transport region including seven western states: California, Oregon, Nevada, Idaho, Utah, Arizona, Colorado, and New Mexico. Although part of the Transport Region, the State of Idaho declined the invitation to participate in the GCVTC. Utah's governor was vice-chair of the GCVTC. Although Congress required a commission to be established for the Grand Canyon National Park, the member states agreed to expand the scope of the GCVTC to address all 16 of the Class I areas on the Colorado Plateau. The GCVTC elected to use a stakeholder-driven process to accomplish its objectives. Ultimately, the organization included 200+ political, policy and technical stakeholders who staffed a variety of committees and subcommittees to perform policy analysis and technical studies, and to participate in the public debate. The GCVTC was funded by EPA grants and contributions from stakeholders, including substantial in-kind labor. During its four-and-one-half year development, the GCVTC was expanded to include the State of Wyoming and tribal leaders as members. The GCVTC appointed a Public Advisory Committee (PAC) representing broad stakeholder interests to provide input and feedback to the GCVTC. Many Utahns were members of the PAC, with two serving on the PAC Steering Committee, and one serving on the Executive Committee as Vice-Chair of the PAC. The 80+ member Public Advisory Committee developed a consensus report of recommendations for the GCVTC that was ultimately adopted by the GCVTC and submitted to EPA in June 1996.[6]

Recommendations of the GCVTC include the following:

* Policies based on energy conservation, increased energy efficiency and promotion of the use of renewable resources for energy production;

* Careful tracking of emissions growth that may affect air quality in clean air corridors;

* Regional targets for sulfur dioxide emissions with a backstop program, probably including a regional cap and possibly a market-based trading program;

* Cooperatively developed strategies, expanded data collection and improved modeling for reducing or preventing visibility impairment in areas within and adjacent to

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[5]*Clean Air Act Amendments of 1990, Section 169B*, United States Congress. 42 U.S.C. 7492. Government Printing Office: Washington, D.C. November 15, 1990.

[6]Grand Canyon Visibility Transport Commission. *Recommendations for Improving Western Vistas*. Western Governors' Association: Denver, CO, June 10, 1996.

Class I areas, pending further studies of sources adjacent to Class I areas;

* Emissions cap for mobile sources at the lowest level (expected to occur in 2005) and establishment of a regional emissions budget, as well as implementation of national strategies aimed at reducing tailpipe emissions;

* Further study to resolve issues regarding the modeled contribution to visibility impairment of dust from paved and unpaved roads;

* Continued bi-national cooperation to resolve data gaps and jurisdictional issues around emissions from Mexico;

* Programs to minimize emissions and visibility impacts and to educate the public about impacts from prescribed fire and wildfire, because emissions are projected to increase significantly through 2040; and

* Creation of an entity like the GCVTC to promote, support and oversee the implementation of many of the recommendations in this report.

EPA initially proposed regional haze regulations in 1997.[7] The proposed regulations described a generic program to apply nationally and did not include provisions to address the recommendations of the GCVTC. The Western Governors' Association (WGA) engaged key stakeholders to develop a recommendation on how to transform the GCVTC recommendations into a Regional Haze Rule. WGA approved their recommendation and transmitted it to EPA in June 1998.[8] Based on this and other public input, EPA issued the final Regional Haze Rule in July 1999 with a national program (§ 308) that could apply to any state or tribe and an optional program (§ 309) relying on the work of the GCVTC that is available to the states and tribes in the nine-state GCVTC transport region.[9]

7. Western Regional Air Partnership

The GCVTC recognized the need for a long-term organization to address the policy and technical studies needed to address regional haze. The Western Regional Air Partnership (WRAP) was formed in September 1997. The WRAP's charter allows it to address any air quality issue of interest to WRAP members, though most current work is focused on developing the policy and technical work products needed by states and tribes in writing their regional haze state implementation plans (SIPs) and tribal implementation plans (TIPs). The WRAP has been co-chaired by the governor of Utah and the governor of the Acoma Pueblo. The WRAP Board is currently composed of representatives from 13 states, 13 tribes, the U.S. Department of Agriculture, the U.S. Department of the Interior, and the Environmental Protection Agency. The WRAP operates on a consensus basis and receives financial support from EPA. The WRAP established stakeholder-based technical and policy oversight committees to assist in managing the development

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[7] *40 CFR Part 51 - Regional Haze Regulations; Proposed Rule - 62 FR 41138.* United States Environmental Protection Agency, Government Printing Office: Washington, D.C. July 31, 1997.

[8] Leavitt, M. O., Governor of Utah, Letter to EPA Administrator Browner on behalf of the Western Governors' Association, June 29, 1998.

[9] *40 CFR Part 51 - Regional Haze Rule; Final Rule, 64 FR 35714.* United States Environmental Protection Agency, Government Printing Office: Washington, D.C. July 1, 1999.

process of regional haze work products. Stakeholder-based working groups and forums were established to focus attention on the policy and technical work products the states and tribes need to develop their implementation plans.

The WRAP developed and submitted an Annex to the GCVTC recommendations to define a voluntary program of sulfur dioxide emission reduction milestones coupled with a backstop market-trading program to assure emission reductions. EPA proposed changes to the Regional Haze Rule to incorporate the GCVTC Annex, and the final rule was published on June 5, 2003.[10] The WRAP is completing a suite of work products to support states and tribes developing GCVTC-based regional haze implementation plans. Additional information about the WRAP can be found on the WRAP web site at http://www.wrapair.org.

8. Mandatory Federal Class I Areas Addressed in 2003 SIP

The Regional Haze Rule under 40 CFR 51.309 requires states to address visibility protection for regional haze in the 16 Class I areas studied by the GCVTC in the initial regional haze SIP submitted by December 31, 2003. Other Class I areas are to be addressed after interstate consultation. These will be addressed in future SIP revisions as necessary.

Five of the 16 GCVTC Class I areas are in Utah, and Utah has no other Class I areas not covered under this initial SIP for regional haze. The Class I areas addressed are shown in Figure 1. The areas within the state of Utah are shown in Figure 2.

[10] *40 CFR Part 51 - Regional Haze Regulations; Final Rule, 68 FR 33764*, United States Environmental Protection Agency. Government Printing Office: Washington, D.C. June 5, 2003.

Figure 1. 16 GCVTC Class I Areas Addressed by 40 CFR 51.309

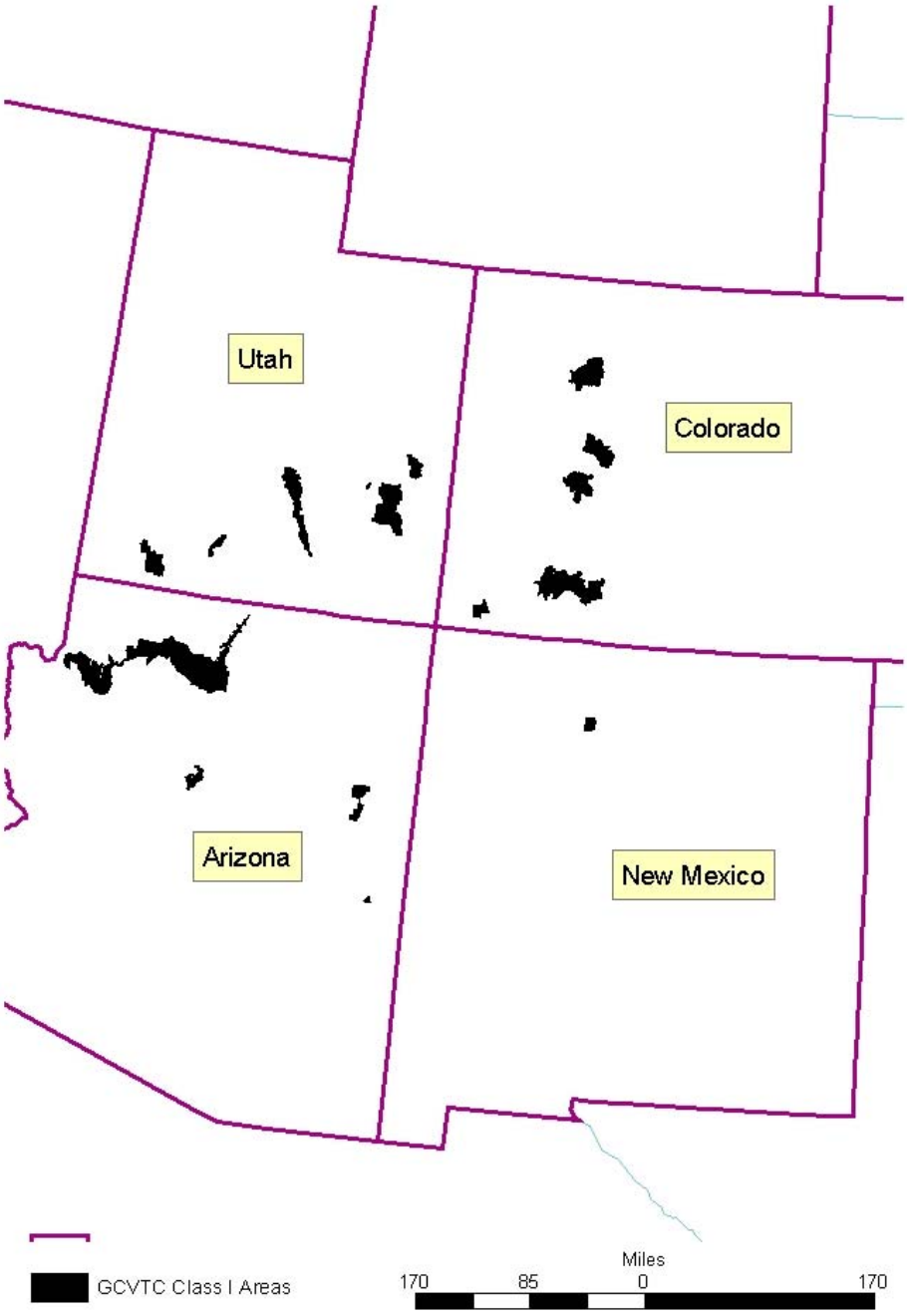
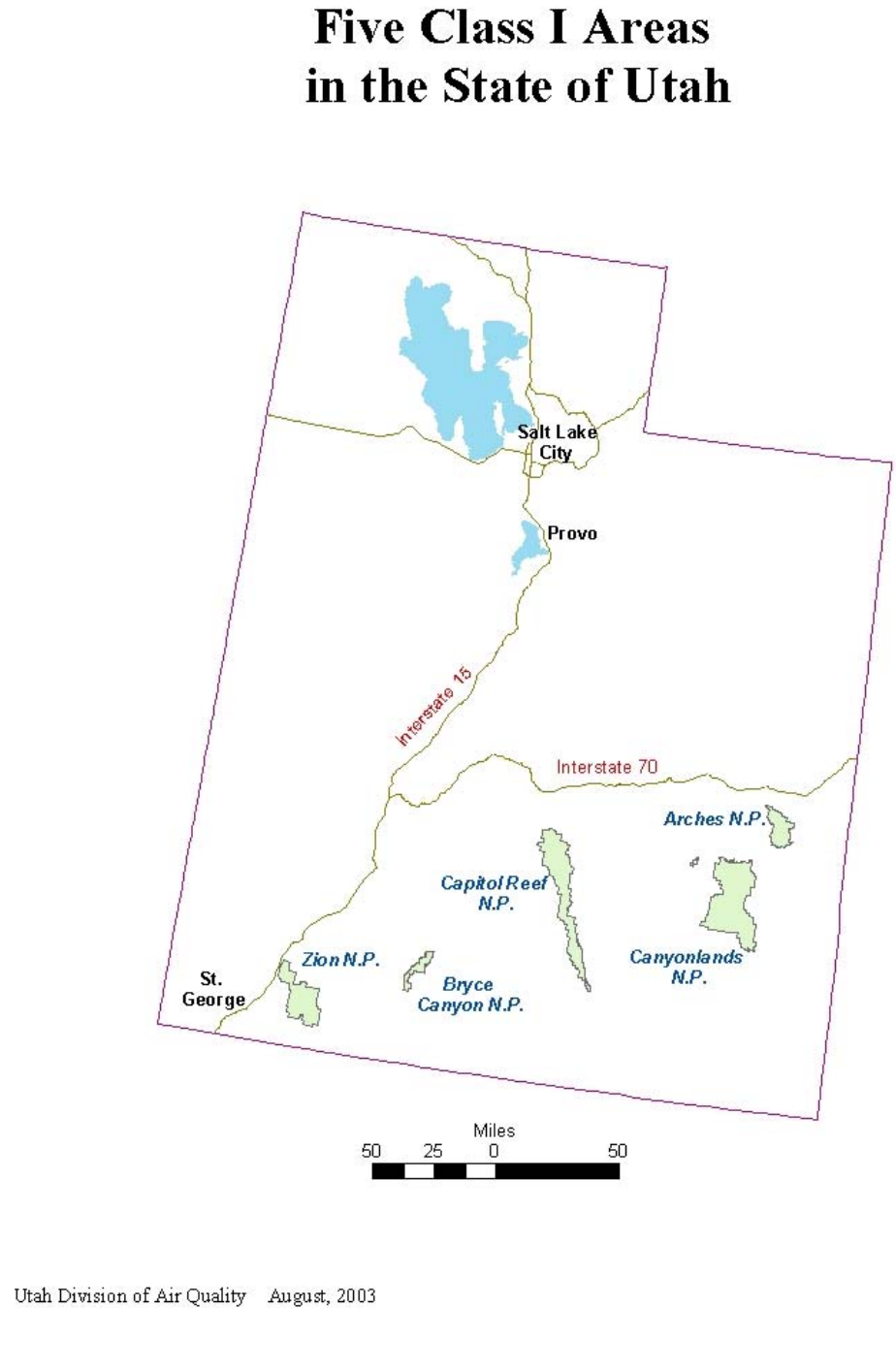


Figure 2. Utah Class I Areas Addressed by 40 CFR 51.309.



C. LONG-TERM STRATEGY FOR THE CLEAN-AIR CORRIDOR

1. Regulatory History and Requirements

One of the required tasks of the Grand Canyon Visibility Transport Commission was to review whether clean-air corridors exist for the 16 GCVTC Class I areas. A clean-air corridor is a geographic region that contributes clean air to the Class I areas on the days with best visibility. If clean-air corridors were found to exist, the GCVTC was required to recommend whether additional control strategies were needed to manage emissions growth to protect visibility on the least impaired days in the Class I areas. For the purpose of assessment, the GCVTC considered the average of the days representing the 20% best visibility conditions to be the least impaired days. EPA also used this definition in defining the term in the Regional Haze Rule (40 CFR 51.308 and 51.309).

In 1995 the GCVTC Meteorology Subcommittee completed an analysis of the geographical source areas contributing to least impaired days in the 16 GCVTC Class I areas. The analysis, in a report entitled, *Clean-Air Corridors: A Framework for Identifying Regions that Influence Clean Air on the Colorado Plateau*,[11] showed that the area north and west of the Grand Canyon National Park does provide clean air to the Grand Canyon area primarily due to a combination of favorable meteorological conditions (rain washout and higher ventilating winds) and low emissions of pollutants from the sparsely populated area. The GCVTC Public Advisory Committee (PAC) reviewed the clean-air corridor analysis and emission projections and determined that, for the period through 2040, emissions growth is projected to be less than the amount that would degrade visibility on the least impaired days in the 16 Class I areas. Based on this finding, the PAC recommended emissions growth be monitored in the future but that no additional control strategies were needed in the clean-air corridor at that time. The GCVTC adopted this recommendation and included it in its final report to EPA, which was integrated into the Regional Haze Rule.[12]

The projections of visibility conducted by the WRAP and documented in Appendix C also indicate that visibility on the 20% best and worst days will improve through 2018.

The Regional Haze Rule requires states submitting implementation plans under 40 CFR 51.309 to determine if there are additional areas to be considered as clean-air corridors for emission tracking purposes in the GCVTC areas. The successor to the GCVTC, the Western Regional Air Partnership (WRAP), completed a technical analysis to validate the emissions growth projections in the clean air corridors. This analysis was

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[11]Meteorology Subcommittee of the Grand Canyon Visibility Transport Commission. *Clean Air Corridors: Framework for Identifying Regions that Influence Clean Air on the Colorado Plateau.* Western Governors' Association: Denver, CO, July 1995.

[12]64 FR 35751, July 1, 1999.

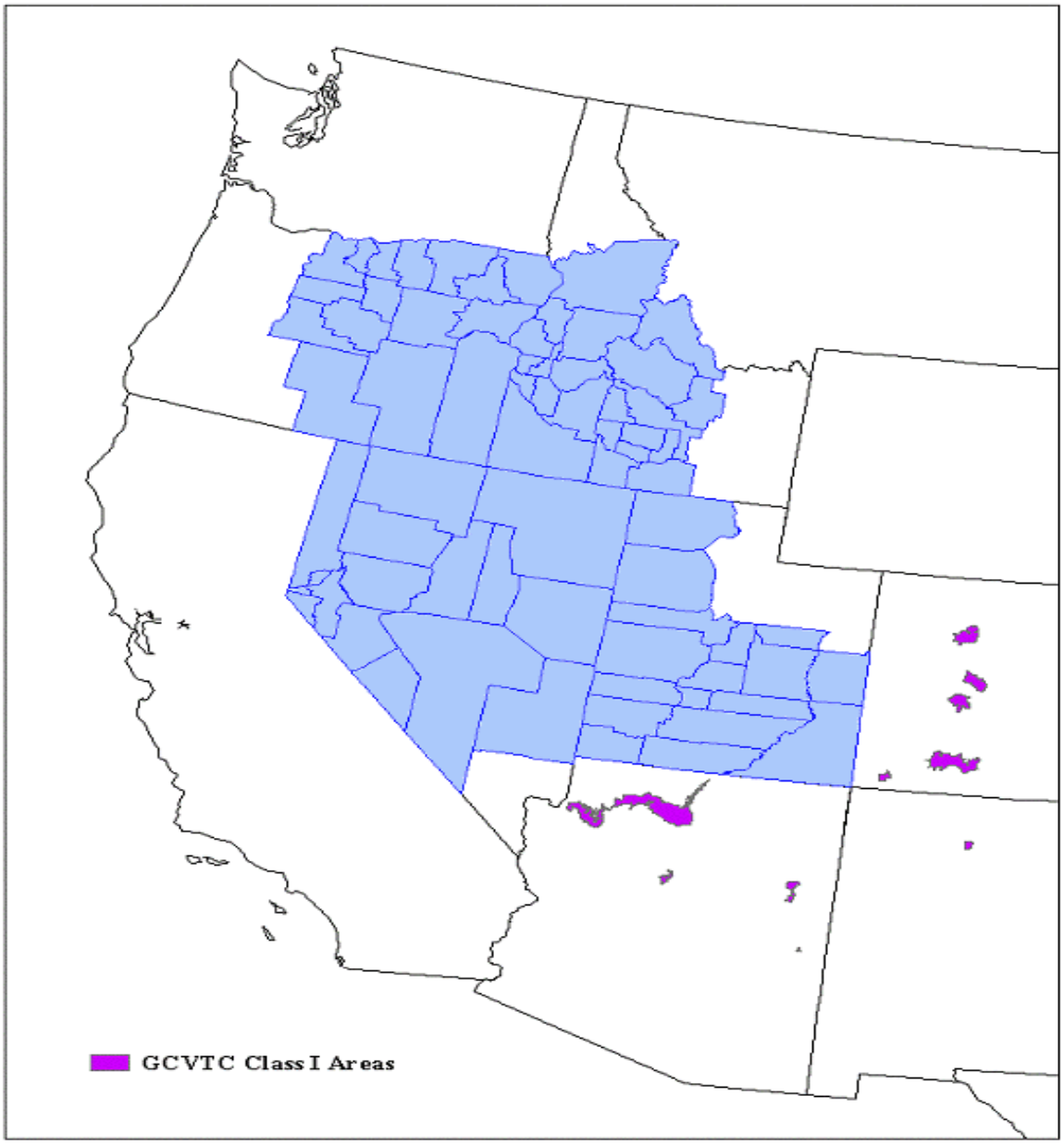
included as part of the WRAP consensus policy.[13] A copy of this policy is contained in the Utah TSD Supplement. The WRAP policy defined a clean air corridor previously identified by the GCVTC Meteorology Subcommittee, and modified to recognize county level emission inventory practices and an emissions tracking requirement in the clean air corridor. The technical studies and findings supporting the WRAP Clean-Air Corridor Policy are located in Chapter 3 of the WRAP Technical Support Document.

2. Identification of the Clean-Air Corridor; Other Clean-Air Corridors

Pursuant to 40 CFR 51.309(d)(3)(i), the State of Utah concurs with the identification of an existing clean-air corridor as defined in the WRAP Clean-Air Corridor Policy. The boundary of the clean-air corridor is indicated on the map in Figure 3 provided below. This clean-air corridor was identified using studies conducted by the Meteorological Subcommittee of the GCVTC, and updated in the WRAP technical and policy analysis of the area described in the WRAP Clean-Air Corridor Policy. A large portion of Utah resides in the identified clean-air corridor.

[13] *WRAP Policy on Clean Air Corridors*, adopted by Western Regional Air Partnership, November 13, 2002.

Figure 3. Map of the Clean Air Corridor in the Transport Region



Source: Figure 1 from the WRAP Policy on Clean Air Corridors.

The State of Utah, pursuant to 40 CFR 51.309(d)(3)(v), has determined, based on the WRAP Clean-Air Corridor Policy and technical analysis, that no other clean-air corridors are identified at this time. The State of Utah commits to participating in a regional effort to review this determination as part of periodic plan revisions required under 40 CFR 51.309(d)(10).

3. Strategy for Clean Air Corridors

(a) Comprehensive emissions tracking program. Pursuant to 40 CFR 51.309(d)(3), the State of Utah commits to monitoring changes in emissions inside and outside the clean-air corridor with an emissions tracking program developed by the WRAP to ensure that visibility does not degrade on the least impaired days in any of the 16 GCVTC Class I areas. The State of Utah commits to providing statewide annual emission inventory data for use in the WRAP emissions tracking program. The state of Utah is working with the WRAP to develop a comprehensive emissions tracking system.[14] Utah, working with the WRAP, will summarize emission trends in order to identify any significant emissions growth that could lead to visibility degradation in the 16 Class I areas. Included in this summary will be an assessment of whether any significant emissions growth has occurred within or outside the clean-air corridor, in accordance with (b) and (c) below. The State of Utah will work cooperatively with states not submitting a plan under 40 CFR 51.309 that have emissions within or outside the clean-air corridor that could affect air quality in the clean-air corridor, to ensure the emissions are incorporated into the tracking program through inter-state consultation.

(b) Patterns of growth within the clean-air corridor. Pursuant to 40 CFR 51.309(d)(3)(ii), the State of Utah has determined, based on the WRAP Clean-Air Corridor Policy and WRAP technical analysis, that current projections of emissions changes inside the identified clean-air corridor will not contribute to degradation of visibility on the least impaired days in the 16 Class I areas during the planning period through 2018. Future emissions growth will be tracked in accordance with the comprehensive emissions tracking system noted in (a) above. The WRAP will summarize annual emission trends within the clean-air corridor and assess whether any significant emission growth has occurred within the corridor as an analysis tool for states.

(c) *Patterns of growth outside the clean-air corridor.* Pursuant to 40 CFR 309(d)(3)(iii), the State of Utah has determined, based on the WRAP Clean-Air Corridor Policy and technical analysis, that current projections of emission changes in areas outside the identified clean-air corridor will not contribute to degradation of visibility on the least impaired days in the 16 Class I areas during the planning period through 2018. The State of Utah will ensure that WRAP will track emissions in areas outside the clean-air corridor and report to the State of Utah on any significant changes in emission projections that may require a reassessment of this determination in future SIP revisions, as required in 40 CFR 51.309(d)(10).

(d) Actions if impairment inside or outside the clean-air corridor occurs. The State of Utah, in coordination with other transport region states and tribes, will review the WRAP's annual summary of emission trends inside and outside the clean-air corridor and determine if significant emissions growth as identified within the corridor in

[14]EA Engineering, Science and Technology, Inc, for the WRAP Emissions Forum. *Emissions Forum Data Reporting, Management, and Tracking System: Draft Final Report: Needs Assessment for Evaluation and Design of an Emissions Data Reporting, Management, and Tracking System.* July, 2003. From the WRAP Web site on August 20, 2003.

accordance with (b) above, or was identified outside the corridor, in accordance with (c) above. If significant emissions growth is identified, the State of Utah, in coordination with other transport region states and tribes, will conduct, or seek WRAP assistance in conducting, an analysis of the emissions growth on visual air quality impacts on the least impaired days in any of the 16 Class I areas of the Colorado Plateau. Pursuant to 40 CFR 51.309(d)(3)(iv), if this analysis finds that this growth is causing visibility impairment in the 16 Class I areas, the State of Utah, in coordination with other transport region states and tribes, will evaluate the need for additional emission reduction measures and identify an implementation schedule for such measures, if needed. The implementation of any additional emission measures shall be coordinated with all appropriate transport region state and tribes, on a mutually agreed upon timetable, and reported to EPA in accordance with the periodic progress reports required under 40 CFR 51.309(d)(10)(i). If the WRAP regional planning process is unable to perform such an analysis for the Class I areas in Utah, or come to a consensus on the interpretation of such an analysis, the State of Utah will perform such studies and engage in independent interstate consultation provided for under 40 CFR 51.309(d)(11).